Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-25 (Cancelled)

26. (Currently Amended) ~~The method according to claim 59~~ A method of identifying a gene that alters the lifespan of an organism, said method comprising:

providing a control cell culture and one or more test cultures each comprising mother and daughter cells possessing two chimeric genes encoding a protein required for replication, one gene under control of an inducible promoter responsive to growth medium conditions and the other gene under control of a promoter operable in mother cells but not daughter cells; wherein one or more test cell cultures but not the control cell culture comprise mother yeast cells that possess a genotype modification of either a non-essential gene or an essential gene, in which case the genotype modification is non-lethal;

culturing the control cell cultures and one or more test cell cultures under conditions whereby mother yeast cells can replicate and daughter yeast cells cannot; and

determining whether the mother yeast cells in the one or more test cell cultures exhibit a change in replicative lifespan when compared to the mother yeast cells in the control cell culture, wherein an increase in the replicative lifespan for mother yeast cells of a test cell culture indicates that the genotype modification enhances the replicative lifespan of an organism possessing the genotype modification and a decrease in the replicative lifespan for mother yeast cells of a test cell culture indicates that the genotype modification decreases the replicative lifespan of an organism possessing the genotype modification;

wherein the yeast strain is a homozygous diploid host strain of yeast carrying two identical copies of each of the two chimeric genes but having a mutation in one copy of the non-essential gene.

27-58. (Cancelled)

59. (Currently Amended) A method of identifying a gene that alters the lifespan of an organism, said method comprising:

providing a control cell culture and one or more test cultures each comprising mother and daughter cells possessing two chimeric genes encoding a protein required for replication, one gene under control of an inducible promoter responsive to growth medium

conditions and the other gene under control of a promoter operable in mother cells but not daughter cells; wherein one or more test cell cultures but not the control cell culture comprise mother yeast cells that possess a genotype modification of either a non-essential gene or an essential gene, in which case the genotype modification is non-lethal;

culturing the control cell cultures and one or more test cell cultures under conditions whereby mother yeast cells can replicate and daughter yeast cells cannot, said culturing being carried out on a solid growth medium; and

determining whether the mother yeast cells in the one or more test cell cultures exhibit a change in replicative lifespan when compared to the mother yeast cells in the control cell culture, wherein an increase in the replicative lifespan for mother yeast cells of a test cell culture indicates that the genotype modification enhances the replicative lifespan of an organism possessing the genotype modification and a decrease in the replicative lifespan for mother yeast cells of a test cell culture indicates that the genotype modification decreases the replicative lifespan of an organism possessing the genotype modification;

said determining comprising assessing colony size of colonies present in the control cell culture and colonies present in the one or more test cell culture, said assessing comprising capturing an image of colonies present in the control cell culture and an image of each of the one or more test cell cultures; and calculating the two-dimensional area of colonies in each of the images, wherein the two-dimensional area of a colony is proportional to the replicative lifespan of the mother cell.

60. (Previously Presented) The method according to claim 59 wherein said culturing is carried out in a growth medium that allows for mother cell replication but not daughter cell replication.

61. (Previously Presented) The method according to claim 60 wherein the growth medium of the control cell culture and the one or more test cell cultures is free of galactose.

62. (Previously Presented) The method according to claim 59 wherein the one or more test cell cultures comprise mother cells that possess a genotype modification involving a nonessential gene.

63. (Previously Presented) A method of identifying a gene that alters the lifespan of an organism, said method comprising:

providing a control cell culture and one or more test cultures each comprising mother and daughter cells possessing two chimeric genes encoding a protein required for replication, one gene under control of an inducible promoter responsive to growth medium conditions and the other gene under control of a promoter operable in mother cells but not daughter cells; wherein one or more test cell cultures but not the control cell culture comprise mother yeast cells that possess a genotype modification of a non-essential gene, which genotype modification is selected from the group of a deletion mutant, an overexpression mutant, an addition mutant, or encoding a mutant protein;

culturing the control cell cultures and one or more test cell cultures under conditions whereby mother yeast cells can replicate and daughter yeast cells cannot; and

determining whether the mother yeast cells in the one or more test cell cultures exhibit a change in replicative lifespan when compared to the mother yeast cells in the control cell culture, wherein an increase in the replicative lifespan for mother yeast cells of a test cell culture indicates that the genotype modification enhances the replicative lifespan of an organism possessing the genotype modification and a decrease in the replicative lifespan for mother yeast cells of a test cell culture indicates that the genotype modification decreases the replicative lifespan of an organism possessing the genotype modification.

64-71. (Cancelled)

72. (Previously Presented) The method according to claim 59 wherein the one or more test cell cultures comprises greater than ten test cell cultures.

73. (Previously Presented) The method according to claim 59 wherein the one or more test cell cultures comprises greater than one-hundred test cell cultures.

74. (Cancelled)